AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) A nano-structured synthetic implant[[,]] comprising a polymeric material, said polymeric material displaying nano-sized surface features[[,]] and a surface roughness of ~~about~~ 50 nm or greater, wherein said surface features comprise a dimension having a size within the range of ~~about~~ 25 nm to less than 100 nm.

2. (Currently Amended) A nano-structured synthetic implant[[,]] comprising a polymeric material, said polymeric material displaying nano-sized surface features[[,]] and a surface roughness of ~~about~~ 50 nm or greater, wherein the surface features are formed by chemical treatment of said polymeric material, and have one or more dimensions in the range from ~~about~~ 50 nm to less than ~~about~~ 100 nm.

3. (Previously Presented) The implant of claim 1 wherein the polymeric material is selected from the group consisting of polyglycolic acid, polylactic acid, poly(lactic acid-glycolic acid), poly(ether-urethane), polycaprolactone and poly(glycolide-caprolactone).

4. (Previously Presented) The implant of claim 2 wherein the chemical treatment comprises contacting the polymer with a compound selected from the group consisting of HCl, H_2SO_4, $HClO_4$, HNO_3, H_3PO_4, HF, NaOH, K_2CO_3 and $NaHCO_3$.

5. (Currently Amended) The implant of claim 1 wherein the nano-sized surface features have at least one dimension in the range from ~~about~~ 25 nm to ~~about~~ 50 nm.

6. (Cancelled).

7. (Original) The implant of claim 1 wherein the polymer has a surface roughness of about 100 nm or greater.

8. (Original) The implant of claim 1 wherein the polymer has a surface area of greater than about 30 μm^2 per 25 μm^2.

9. (Original) The implant of claim 1 wherein the polymeric material is a polymeric film.

10. (Original) The implant of claim 1 wherein the polymeric material is a biodegradable polymer.

11. (Original) The implant of claim 1 wherein the polymeric material comprises a compound selected from the group consisting of poly(lactic acid-glycolic acid), poly(ether-urethane), and polycaprolactone.

12. (Previously Presented) The implant of claim 9 wherein the polymeric material comprises a polymeric film of poly(lactic-glycolic acid) and arginine-aspartic acid peptides.

13. (Previously Presented) The implant of claim 11 further comprising an extracellular matrix component selected from the group consisting of collagen I, collagen III, collagen IV, collagen V, laminin, fibronectin, elastin, elastin-associated microfibrillar proteins, proteoglycans and arginine-aspartic acid peptides.

14. (Previously Presented) The implant of claim 1 further comprising an extracellular matrix component of bladder smooth muscle cells.

15. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is incorporated into said implant.

16. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is coated on the surface of said implant.

17. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is coated on the surface and incorporated into said implant.

18. (Previously Presented) The implant of claim 13 further comprising a population of cells, said population of cells seeded on the polymer surface.

19. (Original) The implant of claim 18 wherein the cells are selected from the group consisting of smooth muscles cells, fibroblasts, urothelial cells, neutrophils, monocytes, fibroblasts, and macrophages.

Claims 20-32 (Cancelled).

33. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is selected from the group consisting of proteins, growth factors, and cytokines.

34. (Previously Presented) The implant of claim 15 wherein the extracellular matrix component is selected from the group consisting of proteins, growth factors, and cytokines.

35. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is selected from the group consisting of collagen I, collagen III, collagen IV, collagen V, laminin, fibronectin, elastin, elastin-associated microfibrillar proteins, proteoglycans and arginine-aspartic acid peptides.

36. (Previously Presented) The implant of claim 14 wherein the extracellular matrix component is collagen IV.

37. (Currently Amended) A nano-structured synthetic implant, said implant consisting essentially of

a polymeric material having a surface roughness of ~~about~~ 50 nm to less than 100 nm and ~~said synthetic implant comprises~~ a further surface feature having a dimension in the range from ~~about~~ 50 nm to less than 100 nm; and

a population of cells.

38. (Currently Amended) A nano-structured synthetic implant comprising a polymeric material, said polymeric material ~~having nano-sized surface features~~ comprising peaks and valleys formed on the surface of said polymeric material, wherein a dimension selected from the group consisting of peak height, valley depth, peak width at half height and valley width at half depth, is within the range of ~~about~~ 25 nm to less than 100 nm.

39. (Currently Amended) The nano-structured synthetic implant of claim 38 wherein the ~~surface features~~ peaks and valleys are randomly distributed on the surface of said implant.

40. (Currently Amended) The nano-structured synthetic implant of claim 38 wherein the ~~surface features~~ peaks and valleys are uniformly distributed on the surface of said implant.

41. (Currently Amended) The nano-structured synthetic implant of claim 38 wherein ~~wherein~~ two or more dimensions selected from the group consisting of peak height, valley depth, peak width at half height and valley width at half depth, are each within the range of ~~about~~ 25 nm to less than 100 nm.

42. (Currently Amended) The implant of claim 1 wherein the nano-sized surface features are formed by a molding process and have one or more dimensions in the range from ~~about~~ 50 nm to less than ~~about~~ 100 nm.